

*Sub A7*

What is claimed is:

1. A method for resolving a storage object's absolute location within a first storage environment to grant access to the storage object, comprising:
  - 5 receiving a storage object reference;
  - determining an initial stack level associated with the storage reference;
  - iterating through one or more additional stack levels beginning with the initial stack level; and
  - translating the storage reference through each iteration into one or more relative extents until one or more absolute extents are obtained, wherein the one or more absolute extents comprise the storage object's absolute location within the first storage environment.
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2. The method of claim 1, wherein in receiving the storage object reference, the reference is received from a module included in an application programming interface (API) library.
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3. The method of claim 2, wherein in receiving the storage object reference, the reference is obtained from a client module initiating one or more storage-access modules of the API library resulting in the initiation of the module.
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4. The method of claim 3, wherein in receiving the storage object reference, the client module resides in a second storage environment.
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5. The method of claim 1, wherein in determining the initial stack level, a file system and volume manager associated with the first storage environment is identified.
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6. The method of claim 5, wherein in translating the storage reference, the file system and volume manager provide one or more operations to translate the storage

reference into one or more of the relative extents and one or more of the absolute extents.

7. The method of claim 1, wherein the method is provided as one or more modules within an API library.
8. A method of providing access to a storage object, comprising:
  - receiving a request to access the storage object from a client module in a first storage environment;
  - 10 initiating one or more mapping plug-in modules in a second storage environment;
  - 15 using the mapping plug-in modules to determine a storage hierarchy of the second storage environment; and
  - iterating through the storage hierarchy using one or more of the mapping plug-in modules until one or more absolute storage locations associated with the storage object are determined.
9. The method of claim 8, wherein in using one or more of the mapping plug-in modules, the storage hierarchy includes at least one of a file system level, a volume manager level, a partition level, and a device level.
10. The method of claim 8, wherein in using one or more of the mapping plug-in modules, the storage hierarchy is provided to the client module upon an additional request from the client module.
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11. The method of claim 8, wherein in initiating one or more of the mapping plug-in modules, the one or more of the mapping plug-in modules are indirectly initiated by the request from the client module.

12. The method of claim 11, wherein in initiating one or more of the mapping plug-in modules, the mapping plug-in modules are provided in an application programming interface (API) library, wherein the API library is also used by the client module to make the request through a request module, the request module 5 then initiates one or more of the mapping plug-in modules.

13. The method of claim 8, wherein in using one or more of the mapping plug-in modules, a number of the mapping plug-in modules are provided by a second operating system or a second file system of the second storage environment.

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14. The method of claim 8, wherein in using one or more of the mapping plug modules, a number of the mapping plug-in modules are customized to operate within the second storage environment using the storage hierarchy.

15 15. A storage object access system, comprising:

an application programming interface (API) library having one or more client-accessible modules operable to allow a reference to a storage object in a first storage environment and one or more plug-in modules operable to interface with the client-accessible modules in a second storage environment using the reference and

20 granting access to the storage object to one or more of the client-accessible modules in the first storage environment; and

a client module that establishes an interaction with the storage object from the first storage environment using one or more of the client-accessible modules.

25 16. The system of claim 15, wherein one or more of the plug-in modules interface with one or more services provided by an operating system of the second storage environment.

17. The system of claim 15, wherein one or more of the plug-in modules iterate through a storage management stack associated within the second storage environment when providing the reference.

5 18. The system of claim 17, wherein the iteration includes translating one or more relative references associated with the storage object into one or more absolute references, the one or more absolute references are then associated with the provided reference.

10 19. The system of claim 15, wherein the interaction occurs by using the reference.

20. The system of claim 15, wherein one or more of the plug-in modules determine a current storage management stack level for the reference.

15 21. A storage object access system, comprising:  
a storage management stack having a plurality of stack levels, wherein the stack levels include a lowest level identifying one or more storage devices of a first storage environment;

20 plug-in modules wherein each plug-in module interfaces with one of the stack levels to resolve a reference to a storage object and to pass the resolved reference to a next stack level, unless the resolved reference is an absolute reference to the storage object housed on one or more of the storage devices; and  
a controller that selectively calls a number of the plug-in modules until the 25 absolute reference is obtained.

22. The system of claim 21, wherein one or more replica references are obtained by the controller with the obtained absolute reference, the replica references identifying replicas for the storage object within the first storage environment.

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23. The system of claim 21, wherein the controller is an application programming interface (API) library.

24. The system of claim 21, wherein the controller executes in both the first storage environment and a second storage environment.

25. The system of claim 21, wherein the controller is used by a client module in a second storage environment.

10 26. The system of claim 21, wherein the storage management stack is a storage hierarchy representing a storage configuration for the storage object within the first storage environment.

15 27. The system of claim 21, wherein the stack levels include an application level, a file system level, a volume manager level, and a device level.

28. The system of claim 27, wherein the device driver level is the lowest level.